COURSE DETAIL

INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS
Country Denmark
Host Institution University of Copenhagen
Program(s) University of Copenhagen
UCEAP Course Level Upper Division
UCEAP Subject Area(s) Physics
UCEAP Course Number 125
UCEAP Course Suffix
UCEAP Official Title INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS
UCEAP Transcript Title NUCLR&PARTICLE PHYS
UCEAP Quarter Units 6.00
UCEAP Semester Units 4.00

Course Description

This course provides an introduction and overview of the physics of strong and electroweak interactions and their experimental foundation. These fundamental forces underlie the rich phenomenology of nature's smallest components: elementary particles and atomic nuclei. The course outlines the theoretical and experimental advances which have led to the current understanding of physics at the subatomic scale. These topics are covered at a mathematical level appropriate for undergraduates students of physics. The focus is more on the understanding of phenomena rather than their rigorous mathematical description. The course touches upon selected topics of current interest, including: symmetries and conservation laws in nuclear and particle physics; relativistic kinematics and applications in high-energy reactions; the Standard Model theory: fundamental matter particles and their interactions by strong and electroweak forces; the Higgs mechanism and the origin of mass; neutrino oscillations and masses; effective nucleon-nucleon interactions and models of nuclear physics; alpha, beta, and gamma decay and fission; form factors and structure functions; and selected applications of nuclear and particle physics.

Language(s) of Instruction
English

Host Institution Course Number
NFYB13008U

Host Institution Course Title
INTRODUCTION TO NUCLEAR AND PARTICLE PHYSICS

Host Institution Campus

Host Institution Faculty
Science

Host Institution Degree
Bachelor

Host Institution Department

The Niels Bohr Institute/Physics, Chemistry, and Nanoscience

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